

5. Describe a covalent bond and tell how it differs from an ionic bond, using complete sentences. Relate the structure of an atom to its chemical properties and to the type of chemical bond it forms, using complete sentences and/or well labeled diagrams.

Ans: covalent bond is a kind of chemical bond in which sharing of electron pair take place . Ionic bond involves the complete transfer of valence electrons .

Atomic structure , specifically number and arrangement of electrons in shells and orbitals determines its chemical properties.whether the atom will lose, gain, or share electrons with other atoms to become stable . The atomic number depends on the number of protons . Atomic mass is determined by the total number of protons and neutrons .

6. Describe the special physical properties of water, using complete sentences. Draw two water molecules in a way that illustrates a hydrogen bond. Explain why water is a good solvent, using complete sentences. Show the basis for the high surface tension of water, using complete sentences or well labeled illustration.

Ans : physical properties of Water (H₂O) are :

- 1.high specific heat
- 2.capillary action
- 3.surface tension
4. polarity
5. evaporating cooling

Hydrogen bonding in water molecules :

water molecule has 2 hydrogen and 1 oxygen atom . An individual water molecule is held by polar covalent bond . oxygen atoms are more electronegative . so oxygen atom has a partial negative charge and hydrogen atom has a partial positive charge . The partial positive charge on hydrogen atom is attracted by partial negative oxygen atom of another water molecule . which is known as hydrogen bonding . since water molecule has polar arrangement , it becomes attracted to different molecules like NaCl . Thus water is a universal solvent .

Due to the cohesive nature of water molecule , water molecules are able to hold together in a drop . waters high surface tension is due to hydrogen bonding in it .

